Embedded and distant data processing for system health monitoring

Team Smart Sensing and SyStems Monitoring

Technology & Instrumentation for the Monitoring of Complex Systems

OBJECTIVES

- Frailty analysis of complex systems
- Behavioral modelling thanks to Artificial/Ambient Intelligence approach
- Real-time and longitudinal monitoring

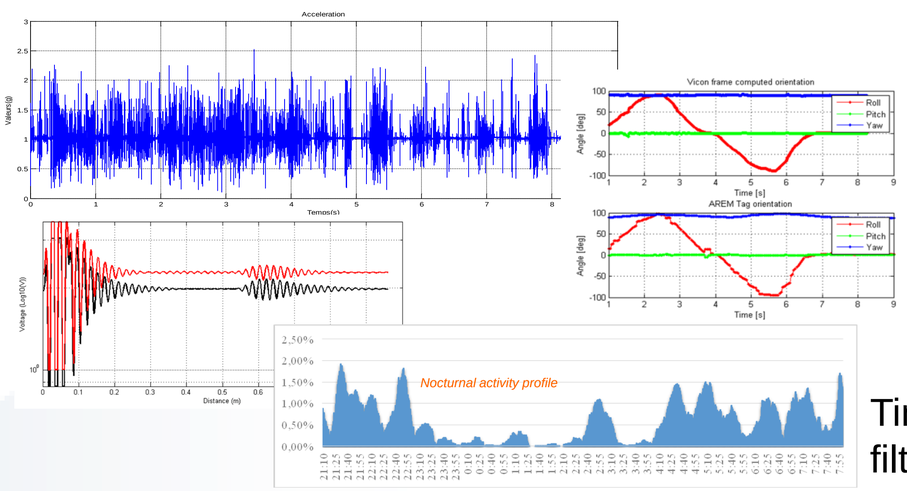
CHALLENGES

- Personalized and scalable model
- Detection of quick and/or slow drift
- Decision support thanks to GUI or message alerts

Application fields

- Human Health Monitoring (HHM)
- Structural Health Monitoring (SHM)
- Environmental Health Monitoring (EHM)

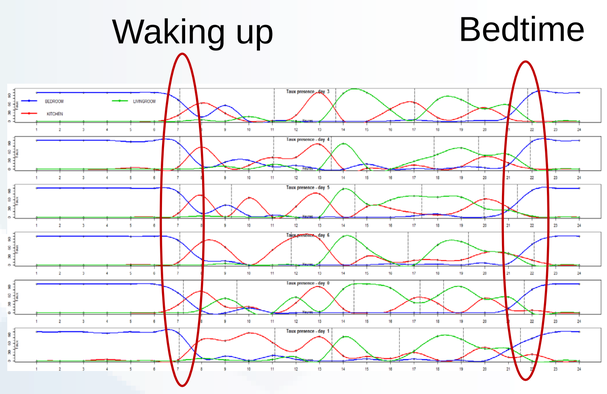
Raw data

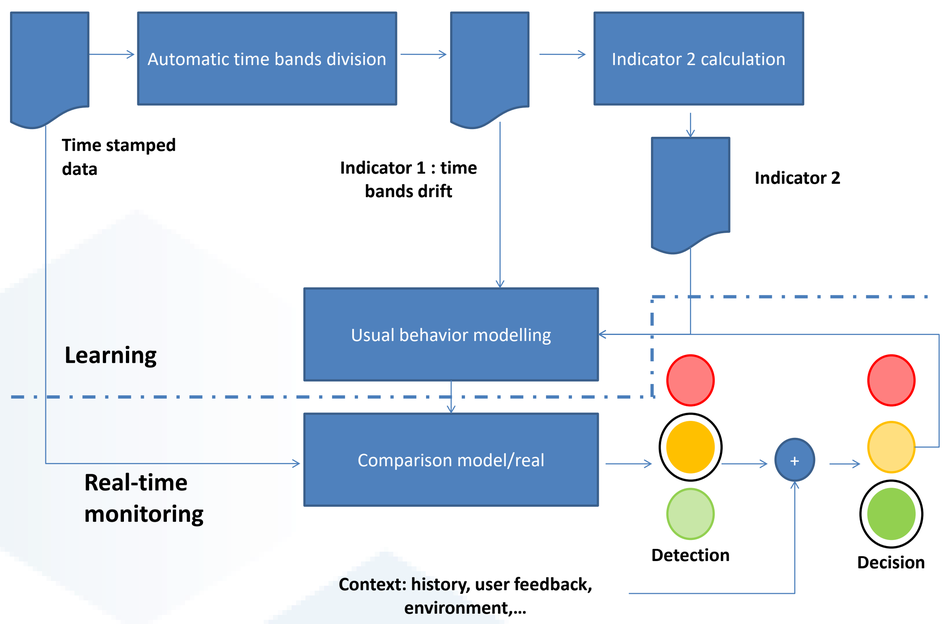


Local data processing

- Embedded on devices
- Filtering, classification, statistical or stochastic approaches…

Time stamped information: filtered data, indicators…

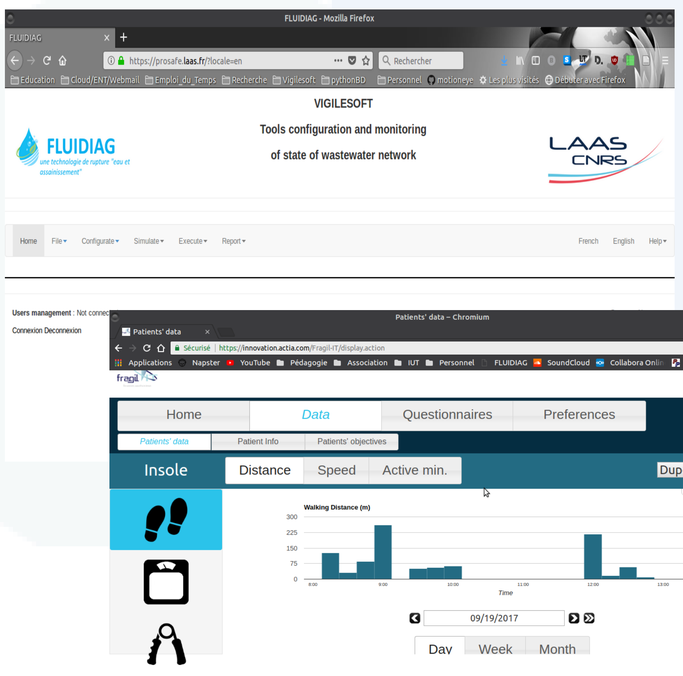




Indicators, threshold, decision…

Time bands division

- Unsupervised/Supervised determination
- One model per time band



Distant Expert system

- Learning phase: statistical approach, classification…
- Data aggregation
- Knowledge representation
- Sliding window modelling
- Two-step procedure: detection and decision
- Individual context adaptation

End-user Monitoring Solutions

- Configuration: indicators, rules, decision
- Real-time monitoring: decision table, decision tree, threshold…
- Historical overview
- User feedback

PARTNERS & FUNDINGS

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